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A RETAINER FOR AN OVER-CENTRE FASTENER

The present invention concerns a retainer for an adjustment device of an over-over-centre fastener as stated in the preamble of claim 1.

Over-centre fasteners (also denominated toggle fasteners or latches) are commonly used for securing - and often clamping - two objects together, such as keeping a lid in a closed position on a box or case. A first part of the fastener, referred to as a striker and often having a hook-like shape, is attached to one of the objects. A base member of the other part of the fastener is attached to the other object.

The present invention refers to the type of fastener (see: http://www.ojop.com/700.htm), where a first end of a lever is jointed to the base member so as to be swingable about a first axis. The other end of the lever serves as a handle member. At a distance from the first end, an engagement means is linked to the lever so as to be swingable about a second axis parallel to the first axis. In use, the engagement means is brought into engagement with the first part of the fastener and the handle with the second axis is swung about the first axis to move the engagement means closer to the base member. In order to vary the distance between the second axis and the engagement means, and thereby the engagement force, the engagement means has a threaded stem member engaged in the threads of an internally threaded body member rotatably connected to the lever about the second axis. The body member is normally a cylindrical body rotatable about its axis.

There is a desire to prevent undesired relative rotation of the two threaded members. This has previously been done by providing a separate block of a suitable synthetic material

having a hole therein threaded in conformity with the threads of the stem member and the internal threads of the body member. In use, the threaded stem member extends through the threads of both the body member and the separate block, the latter having material properties restraining relative rotation of the threaded stem member.

This state of art arrangement requires supply of the separate block, threading a hole therein, and mounting thereof. In order to save material and labour costs as well as time, the present invention proposes still to use the prior art internally threaded body member, but to complete it with a friction increasing insert similarly to what is known from conventional lock nuts.

The invention will now be described, reference being made to the accompanying drawings, wherein:

Fig. 1 is a side view of a conventional fastener;

Fig. 2 is a plan view of the fastener of Fig. 1 provided with a cylindrical, internally threaded body having a friction increasing insert according to the present invention;

Fig. 3 is a view corresponding to Fig. 2 but showing the cylindrical body and portions of the lever sectioned;

Fig. 4 is a section through the cylindrical body of Fig. 3 at an enlarged scale;

Fig. 5 is a view towards the side of the cylindrical body according to Figs. 2 - 4 carrying the insert;

Fig. 6 is a section taken along line VI-VI in Fig. 5;

Fig. 7 is a view corresponding to that of Fig. 5 of an embodiment of internally threaded body having a square cross section;

Fig. 8 is a section taken along line VIII-VIII in Fig. 7;

Fig. 9 is a section taken along line IX-IX in Fig. 7;

Fig. 10 is a view corresponding to that of Figs. 5 and 7 of an embodiment of internally threaded body having a hexagonal cross section;

Fig. 11 is a section taken along line XI-XI in Fig. 10; and

Fig. 12 is a section taken along line XII-XII in Fig. 10.

The fastener shown in Figs. 1 and 2 is shown to connect and clamp together two separate pieces 11 and 12. It includes a first part 13 - a striker - fixed to the first piece 11, and a second part 14 fixed to the second piece 12. The striker has a hook-like free end 13a. The second part comprises a base plate 15 fixed to the second piece 12, a lever 16 and an engagement member 17. The lever 16 is swingable about rivets 18a, 18b engaged in spaced brackets 15a, 15b protruding from the base plate 15. A first end 17a of the engagement member 17 is threaded and engages internal threads 19' of a cylindrical body 19 which is linked to the lever 16 at a distance from the rivets 18a, 18b. More precisely, the cylindrical body 19 is carried between spaced legs 16a, 16b of the lever 16 so as to be rotational about stub shafts 21a, 21b engaged in the spaced legs. A free end of the engagement member 17 is formed with an eye 17b engaging the hook-like end 13a of the striker 13 in the locked position shown in Fig. 1.

In the unclamped state of the engagement member, its threaded end is likely to disengage from the threads of the body 19 due to, for instance, vibrations. To overcome this risk, the present invention proposes to complete the conventional, internally threaded body 19 with a friction increasing insert resembling that of a conventional lock nut.

The enlarged section of Fig. 4 more clearly shows a diametrically extending hole 22 through the body 19 provided with its internal threads 22'. The hole has a widened diameter end portion 22" at one end, and a friction increasing insert 23 is received within that end portion so as to rest against a step 24. The edge of the widened end portion is upset at diametrically opposed locations A, B so as to positively keep the insert 23 in place. Like in a conventional lock nut, the internal diameter of the insert is smaller than the external diameter of the threaded end 17a of the engagement member 17. A preferred material of the insert is Nylon®.

As one alternative to the cylindrical shape of the internally threaded body 19 it may be advantageous to provide an internally threaded body 25 having a substantially square cross section as shown in Figs. 7 - 9, or to provide an internally threaded body 26 having a hexagonal cross sections as shown in Figs. 10 - 12. Such cross sections provide the opportunity to make both ends of the hole 22 in flat opposed surfaces of the respective body. Also, a flat surface enables upsetting the edge of the widened portion of the hole 22 at more than two locations as shown in Fig. 7, where the edge is upset at four locations A, B, C and D that are diabetrically opposed two by two.

CLAIMS

1. A retainer for an adjustment device of an over-centre fastener for securing and clamping two parts (11, 12) together by applying a pulling force between said parts by means of a lever (14), said adjustment device including an externally threaded member (17a) and an internally threaded member (19), c h a r a c t e r i z e d i n that the internally threaded member is a body (19) having a threaded through hole (22) provided with a friction increasing insert (23).

2. The retainer according to claim 1, c h a r a c t e r - i z e d i n that the friction increasing insert (23) is provided at one end of the through hole (22).

3. The retainer according to claim 2, c h a r a c t e r i - z e d i n that the friction increasing insert (23) is annular and rests on a step (24) of an increased diameter portion of the through hole (22).

4. The retainer according to claim 3, c h a r a c t e r - i z e d i n that the edge of the increased diameter portion is at least partly upset to positively keep the insert in place.

5. The retainer according to claim 4, c h a r a c t e r - i z e d i n that the edge of the increased diameter portion is upset at two opposed locations (A, B).

6. The retainer according to claim 4, c h a r a c t e r - i z e d i n that the edge of the increased diameter portion is upset at four locations (A, B, C, D) opposed two by two.

ABSTRACT

A retainer for an adjustment device of an over-centre fastener for securing and clamping two parts together by applying a pulling force between said parts by means of a lever (14). The adjustment device includes an externally threaded member (17a) and an internally threaded member (19). The internally threaded member is a body (19) having a threaded through hole (22) provided with a friction increasing insert (23).

Fig. 3

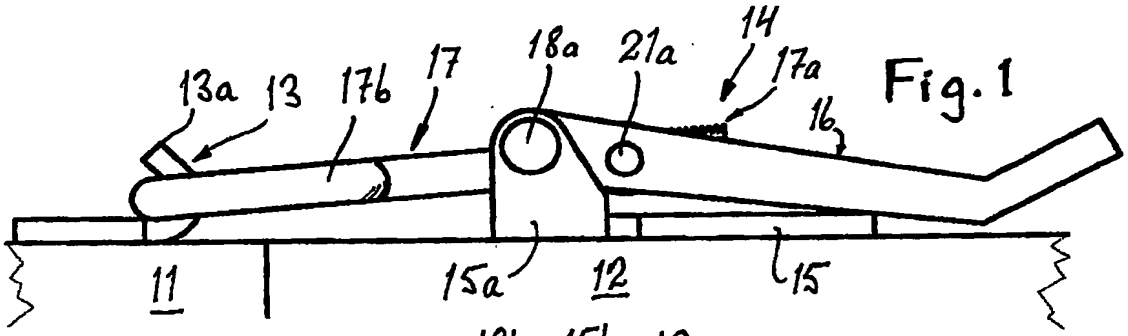


Fig. 1

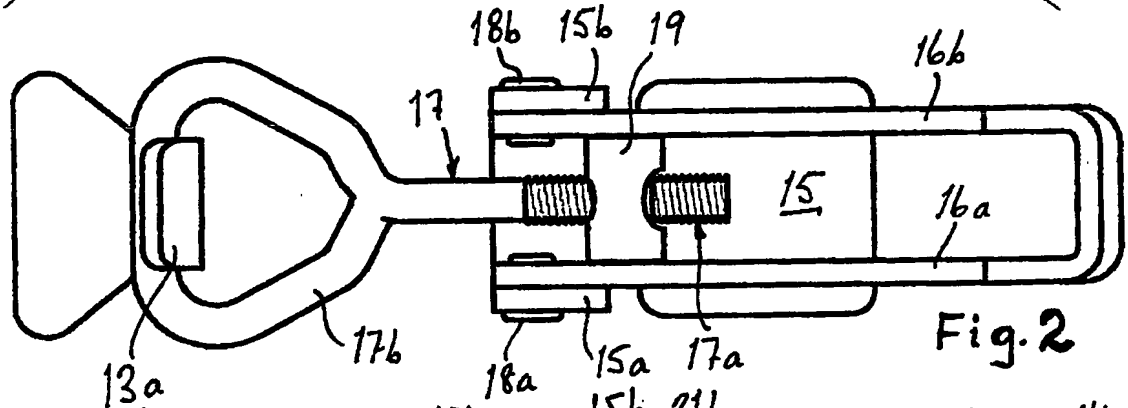


Fig. 2

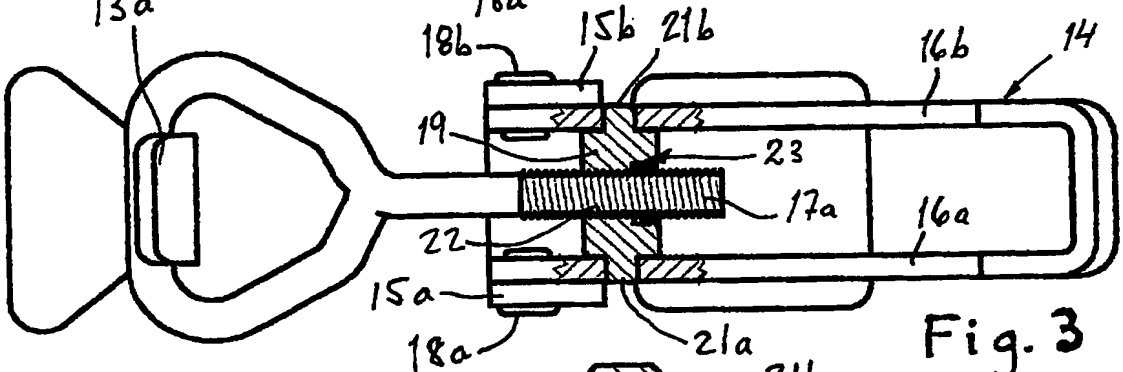


Fig. 3

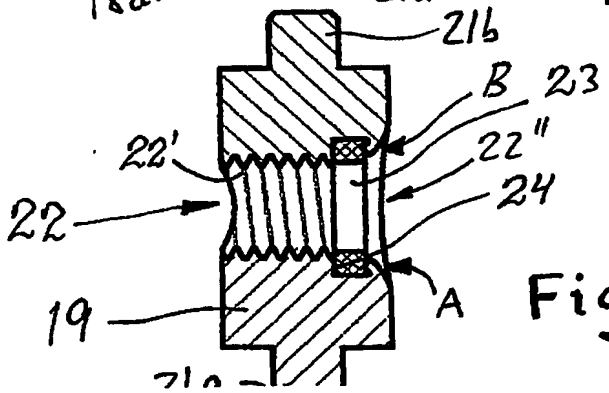
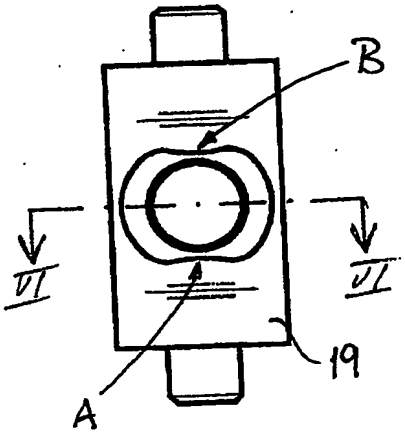


Fig. 4

Fig. 5



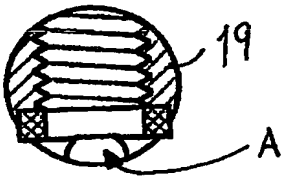
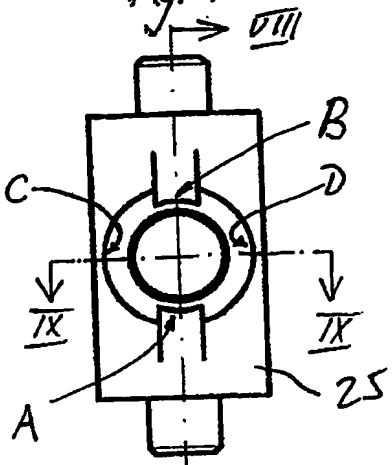


Fig. 6

Fig. 7



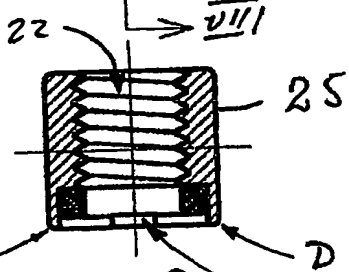


Fig. 9

Fig. 8

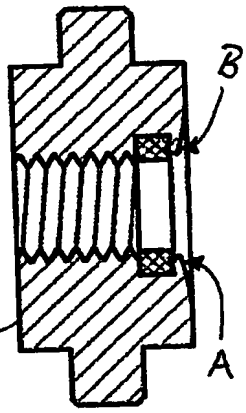


Fig. 10

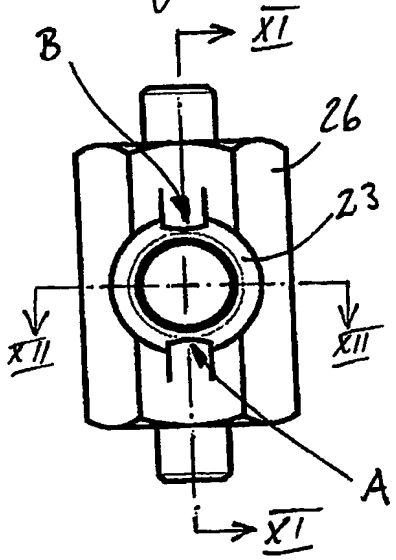


Fig. 11

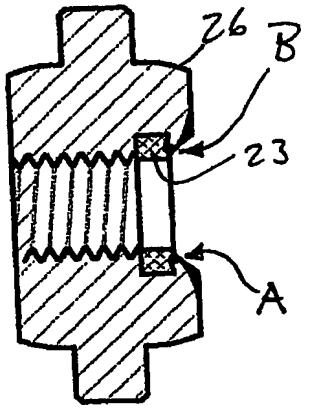


Fig. 12